

**Remarks**

Applicants have received and carefully reviewed the Office Action mailed April 6, 2007. Claims 29, 36, 37, 54, 56, and 59 have been amended and claims 35, 38, and 57 have been canceled. Support for the amendments and new claim is found in the specification, claims, and drawings as originally filed. No new matter has been added. Reconsideration and allowance of the pending claims are respectfully requested.

**Information Disclosure Statement**

The Examiner has not considered the non-US patent references filed with the Information Disclosure Statement filed October 14, 2004. Applicants did send the 9 references, as indicated on the attached copy of the return postcard. Enclosed is a copy of the 1449 and references. The Examiner is respectfully requested to consider the references and initial and provide a copy of the 1449 with the next Office Action.

**Rejections under 35 U.S.C. § 102(b)**

Claims 29, 30, 33-48, and 54-60 are rejected as being anticipated by Pratt et al. (US 6,127,058). Independent claim 29, as amended, recites:

29. (Currently Amended) A method of forming a fuel cell, comprising the steps of:

forming a first aperture defined by a first aperture surface through a first electrode layer;

forming a second aperture defined by a second aperture surface through a second electrode layer;

providing a proton exchange membrane;

providing an adhesive between the first electrode layer and the proton exchange membrane and between the second electrode layer and the proton exchange membrane;

providing a conductive layer on the first electrode layer and/or a conductive layer on the second electrode layer, wherein the conductive layer on the first electrode layer covers at least part of the first aperture surface; and sandwiching the proton exchange membrane and the adhesive between the first electrode layer and the second electrode layer, where the first aperture of the first electrode layer is at least partially aligned with the second aperture of the second electrode layer, thereby exposing the proton exchange membrane.

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Pratt et al. do not appear to teach such method steps. The Examiner appears to be examining claims 29-46 and 54-60 as system or device claims, because the Examiner has not mentioned the claimed method steps, but rather discusses elements of the Pratt et al. device. MPEP 2131 states that, in order to anticipate a claim, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." The instant claims recite specific method steps, which do not appear to be taught by Pratt et al.

In particular, independent claim 29 recites the method step of forming first and second apertures defined by first and second aperture surfaces through first and second electrode layers, respectively. Pratt et al. do not appear to teach such specific method steps. Additionally, independent claim 29, as amended, recites the step of providing a conductive layer on the first and/or second electrode layer, wherein the conductive layer covers at least part of the first aperture surface. Pratt et al. do not appear to teach such a method step. In fact, Pratt et al. do not appear to teach their device as having a conductive layer covering at least a part of a first aperture surface. The Examiner asserts, with regard to original claims 40, 41, 44, 45 and 59, that the conductive layer of Pratt et al. would inherently extend through the apertures since it must conduct electrodes out of the fuel cell. The Examiner has not provided any reasoning or support in Pratt et al. for this assertion. There is no indication in Pratt et al. that their fuel cell would necessarily have a conductive layer covering at least part of an aperture surface, as is recited in independent claim 29 and the claims dependent thereon. Further, there is no indication in Pratt et al. that their fuel cell would necessarily have a conductive layer on a first or second electrode layer extending through the first or second electrode layer, respectively, as is recited in claims 40 and 41. Additionally, there is no indication in Pratt et al. that their fuel cell would necessarily have one or more conductive feed-through contacts in the first or second electrode layer, as is recited in claims 44 and 45.

Independent claim 54, as amended, recites:

54. (Currently Amended) A method of forming a plurality of fuel cells, comprising the steps of:

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providing a first length of material having a first plurality apertures and a first plurality of electrical contacts, wherein the first plurality of electrical contacts include one or more conductive feed-through contacts that extend through the first length of material;

providing a second length of material having a second plurality apertures and a second plurality of electrical contacts;

providing a proton exchange membrane;

providing an adhesive layer between the proton exchange membrane and the first length of material, between the proton exchange membrane and the second length of material, or between the proton exchange membrane and the first and second length of material; and

sandwiching the proton exchange membrane and the adhesive between the first length of material and the second length of material, where the first plurality of apertures are at least partially in registration with the second plurality of apertures, and wherein at least part of the proton exchange membrane is aligned with the plurality of first and second apertures to form a plurality of fuel cells.

Emphasis added. As discussed above with regard to claims 44 and 45, there is no indication in Pratt et al. that their device would necessarily include one or more feed-through contacts. Further, the Examiner has not addressed the specific elements of claim 57, regarding one or more conductive feed-through contacts extending through the first length of material.

Applicants submit that Pratt et al. do not appear to teach each and every element of the specific method steps recited in independent claims 29 and 54 or the claims dependent thereon. The Examiner appears to be asserting that many of the claimed method steps would be inherent in Pratt et al., but the Examiner has not provided any reasoning as to why one of ordinary skill in the art would make such assumptions based on the teachings of Pratt et al. Rather, the Examiner appears to be asserting that the devices of Pratt et al. could have been made using method steps similar to those claimed. Applicants submit that this is not the proper standard for an anticipation rejection.

Regarding independent claim 47, the Examiner asserts that "the adhesive layer discussed above must be conductive in order for the fuel cell to produce electricity, so it will be considered as a conductive layer. The layer would be provided after the apertures were formed in the current collecting layer (column 5, lines 9-13)." Column 5, lines 9-13 of Pratt et al. recites:

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the laminated structure comprising the MEA disposed between the two current collector assemblies must be held together. This can be accomplished by ultrasonically welding or by use of adhesives at the interfaces.

Pratt et al. appears to be merely teaching that the fuel cell layers can be laminated using an adhesive. Pratt et al. do not appear to teach a conductive adhesive, and do not appear to teach first and second conductive layers disposed on at least a portion of the first and second electrode aperture surfaces, respectively, as is recited in claim 47. Further, there is no reason for one of ordinary skill in the art to assume that such a structure would necessarily be present in Pratt et al., based only on the teachings of Pratt et al.

Additionally, there is no motivation or suggestion for one of ordinary skill in the art to modify the device or methods of Pratt et al. to achieve the device and methods as now claimed. Reconsideration and withdrawal of the rejection are respectfully requested.

**Rejections under 35 U.S.C. § 103(a)**

Claims 31 and 32 are rejected as being unpatentable over Pratt et al. in view of Stanley et al. (US 2004/0053100). For at least the reasons set forth above, Pratt et al. do not appear to teach or suggest the basic elements of independent claim 29, from which claims 31 and 32 depend. Stanley et al. do not appear to provide what Pratt et al. lacks. Thus, any combination of Pratt et al. and Stanley et al. also fails to teach or suggest the elements of dependent claims 31 and 32.

Claims 49-53 are rejected as being unpatentable over Pratt et al. in view of Badding et al. (US 2002/0102450). For at least the reasons set forth above, Pratt et al. do not appear to teach or suggest the basic elements of independent claim 47, from which claims 49-53 depend. Badding et al. do not appear to provide what Pratt et al. lacks. Thus, any combination of Pratt et al. and Badding et al. also fails to teach or suggest the elements of dependent claims 49-53.

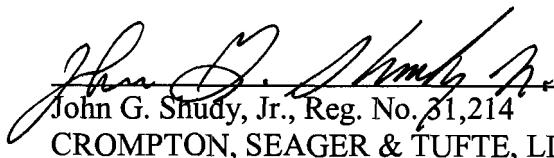
Reconsideration and withdrawal of the rejections are respectfully requested.

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Reconsideration and reexamination are respectfully requested. It is submitted that, in light of the above remarks, all pending claims should now be in condition for allowance. If a telephone interview would be of assistance, please contact the undersigned attorney at 612-677-9050.

Respectfully submitted,

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Receipt is hereby acknowledged for the following in the U.S. Patent and Trademark Office:

Applicant: Robert E. Higashi et al.  
Serial No.: 10/750,581  
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For: MICRO FUEL CELL  
Docket No.: H0005015-0760(1100.1237101)  
Date of Deposit: October 11, 2004

Transmittal Form  
Information Disclosure Statement  
Form PTO 1449  
9 non-US patent references  
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**FORM PTO-1449**

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Atty. Docket No  
H0005015-0760  
(1100.1237101)Serial No.:  
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**LIST OF PATENTS AND PUBLICATIONS FOR  
APPLICANT'S INFORMATION  
DISCLOSURE STATEMENT**

Applicant: Robert E. Higashi et al

Filing Date: December 29, 2003

Group Art: unknown

**U.S. PATENT DOCUMENTS**

Examiner Initial	Document No.	Date	Name
	2001/0028973	10/11/2001	Ong et al.
	2002/0068213	06/06/2002	Kaiser et al.
	2002/0177031	11/28/2002	Doshi et al.
	2003/0054215	03/20/2003	Doshi et al.
	3,133,837	05/19/1964	Eidensohn
	4,048,385	09/13/1977	Regnaut
	4,476,196	10/1984	Poeppl et al.
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	4,596,748	06/1986	Katz et al.
	4,659,559	04/1987	Struthers
	4,857,420	08/1989	Maricle et al.
	4,876,163	10/24/1989	Reichner
	4,910,100	03/20/1990	Nakanishi et al.
	5,298,341	03/29/1994	Khankar et al.
	5,372,617	12/13/1994	Kerrebrock et al.
	5,449,697	09/12/1995	Noaki et al.
	5,804,329	09/08/1998	Amendola
	5,836,750	11/17/1998	Cabuz
	5,851,689	12/1998	Chen
	5,861,221	01/19/1999	Ledjeff et al.
	6,093,501	07/25/2000	Werth
	6,250,078	06/26/2001	Amendola et al.
	6,280,869	08/2001	Chen
	6,326,097	12/04/2001	Hockaday
	6,541,149	04/01/2003	Maynard et al.
	6,620,542	09/16/2003	Pan

<b>FORM PTO-1449</b> Page 2 of 2		Atty. Docket No H0005015-0760 (1100.1237101)	Serial No.: 10/750,581
<b>LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT</b>		Applicant: Robert E. Higashi et al	
		Filing Date: December 29, 2003	Group Art: unknown

### FOREIGN PATENT DOCUMENTS

Examiner Initial	Document No.	Date	Country	Translation Yes No
	57138782	08/1982	JP	Abstract
	04342439	11/1992	JP	Abstract
	09326259	12/1997	JP	Abstract
	DE 19734259	02/11/1999	DE	Abstract
	GB 723180	02/02/1955	GB	

### OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)

	Aiello et al., "Production of Hydrogen from Chemical Hydrides Via Hydrolysis with Steam," International Journal of Hydrogen Energy, Vol. 24, pp. 1123-1130, 1999.
	Amendola et al., "A Safe Portable Hydrogen Gas Generator Using Aqueous Borohydride Solution and Ru Catalyst," International Journal of Hydrogen Energy, Vol. 25, No. 10, pp. 969-975, October 2000.
	Amendola et al., "A Novel High Power Density Borohydride-Air Cell," Electromechanical Society Proceedings, vol. 98-15, pp. 47-54, November 1, 1998.
	Amendola et al., "An Ultrasafe Hydrogen Generator: Aqueous, Alkaline Borohydride Solutions and Ru Catalyst, Journal of Power Sources, Vol. 85, No. 2, pp. 186-189, February 2000.

EXAMINER:

DATE CONSIDERED:

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.